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Plant Engineering in Relation to Costs

By W. T. BRICKENDEN, B.A.Sc., M.E.
Thorne, Mulholland, Howson and McPherson

(Before Hamilton Chapter, November 15, 1934)

THE day is rapidly approaching when industrial management will be forced to change their attitude towards labor which in the past has had to bear the brunt of most of the attacks made by management in their efforts to reduce costs. Higher total wages and shorter hours cannot be avoided. Mr. Green, of the American Federation of Labor after the recent convention in San Francisco, said, in referring to the 30 hour week without any reduction in wages: "Eternally, immovably, uncompromisingly, we shall ask for it until it is adopted. If we are unable to obtain it through persuasion, then we will obtain it by force and strength of the organized labor movement. We issue a challenge to the Government and Industry together." We, in Canada, cannot help but feel the effects here of any such change in the United States and we should, therefore, in anticipating increased labor costs, direct our attention to all other cost factors so that the new condition can be met without jeopardizing the business.

In general, this is a greater problem to Canadian industrial management than would be the case in the United States. The stimulus either good or bad, depending on your politics, given to the development of the manufacturing industries in Canada by protective tariffs coupled with a comparatively limited market, has built up a large number of industries, few of which have been designed and built to produce one product economically, but the majority of which may be described as a conglomeration of plant and equipment to provide manufacturing facilities for a wide, and in some cases unrelated, variety of products. Management, under such conditions, pre-occupied with real problems of production, cannot be blamed if many avoidable elements of waste are overlooked and the cumulative effects of which, while small in themselves, result in costs which are too high.

Through my contacts with cost departments, it appears to me that cost accountants have drifted away from their real responsibility and too frequently become purely mechanical accumulators of statistics, The real purpose of the cost department, and the only one that can justify its existence, is the ability to identify and interpret for the management irregularities in production costs, as they appear from day to day, so as to direct the way to better operating conditions and lower costs.

Let us consider some phases of plant operating conditions or plant engineering under the traditional headings of Material, Direct Labor and Overhead.

Materials

In most industries, direct material is by far the largest item in cost, yet it is usually under the least control. It is common to find inventories, valued at thousands of dollars, being gone over once a year, while the petty cash of a few dollars is checked to the last cent at least once a month. Cost accountants have had difficulty in getting their material costs records to tie in with the financial statement at the end of the year, much to their disgust or embarrassment.

The fundamental cause of the failure to control materials may usually be traced to lack of proper storage facilities.

The storage of materials should be so engineered as to permit an accurate and quick check of quantities, assure complete protection from damage or deterioration and ensure the movement of each material into production with the least effort. In most industries the use of central store rooms is not economical—a combination of store rooms for the smaller and more valuable items with heavier or bulkier items stored at or near the point of use is usually the best arrangement. Whatever system is used, proper bins, racks, or shelving, etc., is essential if losses due to waste, obsolescence or unbalanced inventories are to be avoided.

Some of you may be acquainted with delays in final assembly, caused by missing parts. Not so long ago I was in a plant where the inventory was large, too large in fact, but it was impossible to complete a single unit of merchandise. The first and most important step in the correction of this situation was the design and installation of proper storage facilities. When this was done, it was found that in the case of several of the parts, a sufficient supply was available for several years normal production. The effect of such a condition on costs is evident.

The proper storage of materials, a factor of plant engineering, while apparently only having an intangible effect, in reality does directly influence costs of materials by preventing deterioration, obsolescence and waste. Carelessly stored materials encourage careless handling and use, introduce losses through over or under purchasing and make difficult the enforcement of proper standards. Material costs derived under such plant conditions cannot be dependable.

Direct Labor

While in most industries, direct labor cost is but one third of that of material yet if increased costs due to the increasing rates for direct labor are to be kept to a minimum, consideration must be given to those factors of plant engineering which affect the productivity of labor.

(1) Working Tools: At that period of industrial development when time was not such a consideration and workmen were craftsmen, it was considered very bad form, possibly unethical, for the workman to criticize his tools. Today with time the real element of cost, working tools, (by which, I include, machinery of all kinds and those small tools used by the workman in performing his particular task) must be of the best type for the work in hand.

It will be found that most attention has been given to the larger units of machinery and that frequently the smaller units, particularly hand tools, have been neglected. It is still a general policy for instance, for a machinist to supply his own kit of small tools, gauges, etc., and if you were to examine such outfits, you would find remarkable collections, few suited for the work to be performed. An investigation of the small tools used in your plant may prove both enlightening and profitable.

(2) Lighting: There has probably been sufficient publicity given in various publications recently concerning proper lighting as to make any thing but a reference to it here superfluous. The time lost due to poor lighting is far from being an insignificant factor in direct labor costs. There are few plants that can boast of ideal lighting systems. The efficiency of many of those which are fairly good is often impaired by lack of care. Dirt, dust and discolored or wrong colored walls, ceilings and equipment share this responsibility. It is

easy to check your lighting efficiency, either by watching the antics of your workmen or inviting an engineer from your power commission or electrical suppliers to make a survey and recommendation. It may cost money to fix up the lighting system but you are paying for it whether the renovation is undertaken or not.

(3) Ventilation: The question of ventilation in plants has, in the past, usually covered the removal of obnoxious gases or injurious dusts, etc., and little consideration has been given to the more vital question of air-purification and conditioning. I have been in sections of factories where the housing of animals under the same conditions as men were called upon to work, would undoubtedly result in a prosecution. The factory and health inspectors have accomplished a great deal but modern management should not wait until forced either by law or competition to remedy such conditions. The factory of the future will be completely air-conditioned wherever the processing is such as to make this possible. There may be sections of your plant that the installation of air-conditioning equipment will result in increased production at lower cost.

(4) Conveniences: While this topic is a little outside of my line, I cannot miss this opportunity of condemning the general type of sanitary conveniences usually available to workers in the factory. Most offices are equipped with sanitary water coolers to supply a refreshing drink, convenient to the clerks. In the factory it is not uncommon for the worker to walk the length of the plant to get a drink, usually at a rather unappetising, unkept fountain and in many cases the water is luke warm due to the proximity of the water line to steam pipes. These and allied conditions cannot help but increase costs of direct labor, by their effect not only on the general health of the employee but also in lower efficiency and lost time.

There are other factors of plant engineering referred to later, such as materials handling which have their effect on direct labor costs but I think from the illustrations given, there are ample opportunities in most plants for such improvement in conditions affecting the productivity, welfare and health of direct labor as to amply repay management for the necessary capital expenditure.

Overhead

It is not my intention to start controversy as to what should or should not be included under the heading of overhead, and therefore for the purpose of more orderly discussion, I will consider overhead as representing all those factory expenses which are not directly allocated to the cost of the individual product as direct labor or materials. Not all of these, however, are related to the subject under discussion and I will confine my remarks accordingly to those items of expense which are influenced by plant engineering.

(1) Materials Handling: From the time the raw materials enter the door until the finished product is delivered, the problem of handling materials confronts the management at every turn. In some industries, the development of materials handling has reached a high degree of refinement, such as in the modern metal mines, the paper mills and the automotive plants. However, in the average plant, due to the variety of products handled, as previously mentioned, it is not possible to develop methods of materials handling to the same extent. There are however, many things that can be accomplished in this respect to reduce costs of direct labor and non-productive labor. It is not always the major problems where savings are to be looked for, their magnitude usually draws the attention of management early in the development of the industry, but in many instances around the

plant, there are to be found operations entailing extra labor, stooping, lifting, carrying or reaching, where their elimination would reduce costs. From the regular reports of non-productive labor, the cost accountant should have little difficulty in discovering such instances and be able to lead the way to and co-operate with factory executives in further investigation and correction.

You are all more or less acquainted with the various types of materials handling methods and equipment available. Armed with actual figures and supported by the superintendent there should be no difficulty in obtaining the necessary appropriation from the management.

(2) Power, Light and Heat: While in many instances, this expense is not a large proportion of total overhead expense, yet in my experience the cost of these services is greater than it should be and presents a fertile field for investigation by the cost accountant.

(a) Electric Power: There are few plants in this section of Ontario producing their own electric power and I will therefore consider this only from the viewpoint of purchased power. In the first place accountants should familiarize themselves with the rather involved system of rates used by the Hydro-Electric Power Commission. This system, a heritage from the public utilities of the United States, appears to be designed to fool the consumer in that they are led to believe, by the novel set up of rates, that after a certain minimum of power consumption all additional power used is purchasable at a very low rate. An analysis of the rates soon shows the fallacy of this and indicates that the cost of power depends primarily on only two elements, first the maximum demand (or connected load if no demand meter) and second, the amount of power used. The first of these, the maximum demand charge, is usually the largest portion of the monthly bill and is really a service charge. For instance, the use of an additional 10 horse-power motor for only ten minutes may add $16.00 to the month's power bill. This could occur if the motor were used at a time of normal monthly peak load. The cost of the actual power used by this same motor during this period would only be a few cents. (These figures apply to Hamilton rates).

It is generally recognised that increasing the maximum demand penalizes the user of power, but the extent of this penalty is seldom known by plant executives. In view of this the importance of correct plant engineering with respect to utilization of electrical power to avoid peak loads needs no further comments.

Another element of power cost and one which is not always known to the management is the penalty resulting from low power factor. This penalty is often added to the bill without explanation. The cause of low power factor is under-loaded motors. In times when production is low this condition is more liable to exist and if penalties are being exacted, it will pay to investigate the economics of replacing motors so that they will be fully loaded when in use. There are of course other methods of correcting this condition such as condensors or synchronous motors but these require technical investigation before application, whereas motors can be tested and replaced with usual plant staffs.

The question of group or individual drives also enters into power costs. The trend towards individual drives held sway for a number of years but there is justification for the present tendency to return to group drives. The layout of equipment again influences this problem.

Whatever the conditions in your plant, I believe that you will find the investigation of electrical power utilization will yield gratifying returns.

(b) Lighting: I have already referred to the desirability of proper lighting in the plant. In order to obtain this cheaply and effectively, the wiring should be so laid out as to use power economically and the most efficient, not the cheapest, type of fixtures should be used. In order to obtain the cheapest power for light it is necessary to install your own transformers on the main power line to supply electric energy at reduced voltage for lighting. In this way it is possible to obtain power for lighting at regular power rates provided the installed capacity of motors is more than 50% of the total connected load.

(c) Heat: Of the many materials used in the plant, the burning of fuel and the subsequent use of the heat produced, introduces the greatest hazard of waste as the losses cannot be measured with ordinary equipment nor can they be seen. Even the operation of a modern plant equipped with every device to avoid loss of heat, requires the continuous attention and checking of results to assure the maintenance of efficiency. Unfortunately, few plants in this country are so equipped. Fuel has been considered more or less a necessary evil and while haphazard attempts at improvement have been made, it is usually found that only one step in the direction of fuel conservation has been made, such as the installation of mechanical stokers, and as a result anticipated savings are not always realized.

Losses occur first at the point where the fuel is burned; in the boiler setting; in the boiler itself; and in the flue gases. The overall results of these can be readily determined through the installation of inexpensive equipment and day to day comparison made as well as a check with what should be obtained. This is one cost figure that is a real standard, as the results in your plant can be compared directly with those in any other plant, anywhere. If there are no means in your plant of measuring the quantity of fuel burned and the steam produced, you can be fairly sure that the cost of producing steam is too high.

When we come to the distribution of steam throughout the factory, there are further opportunities for loss. All steam pipes should be insulated as the heat saved by proper pipe covering will pay for its cost in less than one year. Leaks and wastage of steam are not uncommon. Condensate should all be returned to the boiler so as to avoid losses not only due to the heat in the water wasted but also in increased costs of cleaning the boilers.

In ordinary boiler plants the greatest loss of heat is in the flue gases, only part of which is unavoidable. Equipment is available, whereby hot air for heating the factory can be obtained from these otherwise waste gases and the recovery therefrom can reach 25% of the fuel burned. Whether such equipment is economical for the conditions in your plant can only be determine by investigation.

Why so little attention has been, and is paid to the question of economical production of steam has always been a puzzle to me. It may be that management is too busy with production and direct costs to spend much time in consideration of this expense. Unquestionably there has been poorer plant engineering in this respect than in many other expense items mentioned. I can safely say that the cost of heat is too high in the majority of plants.

(3) Maintenance: Plant engineering has a definite effect on maintenance costs. The location of equipment so as to facilitate maintenance is not always given the attention it deserves. I know of one plant for instance where it was necessary to cut a hole through an 18" brick wall to renew a tube in the boiler. If you investigate in detail the maintenance labor tickets you will undoubtedly find many places where unnecessary time is spent in getting at machinery for its repair or maintenance. If a bearing requires oil and it is difficult to get at, the chances are it will not be oiled until it squeals. If a belt requires tightening or replacing and this work involves tearing down part of the machine or shafting, it probably will not be done until a breakage occurs and production is interrupted. Investigation may prove that a few changes will result in a reduction of this expense.

Among other items of overhead expenses there is the question of expense materials. What I have said about direct materials is even more important in the control of such materials since waste does not show up in the individual costs. Proper storage facilities and records are essential for their control. Another item of overhead which becomes an appreciable one in some industries is that of water. In laundries, dye houses, etc., the problem is one of preventing waste of heat to the drain, while in other industries it is a question of cost of water for washing or cooling purposes. In a local plant where an air-conditioner was in operation, city water was first purchased at a cost of over $200.00 per month during the summer months. A deep well was sunk at a cost of $500.00 including pumping equipment, which not only supplies the air-conditioner but also all other requirements for industrial water at a cost of less than $20.00 per month. Heat exchangers are available to recover heat from waste waters and in one laundry with which I am acquainted, the installation of such equipment resulted in cutting the fuel bill in half.

From these rather rambling examples, I believe you will agree with me that there is a very close relationship between plant engineering and costs and at the same time that there are excellent opportunities for the cost accountant to point the way to greater efficiency in plant operations. Cost accountants should use the information that comes to light in the figures assembled by them to direct the attention of the management to wasteful methods or equipment in the plant. A few days ago I interviewed the manager of a large Canadian industry and his remarks concerning the activities of his cost department were far from complimentary. The cost department had developed into a purely mechanical statistical department. How many cost departments can be similarily described?

Not in the accumulation and recording of figures covering daily operation, not in the compilation of routine reports, and not in the verification of cost with financial records, rests the responsibility of cost accountants, but in the interpretation of these figures for the management so that costs may be made what they should be instead of what they are.

A motorist who was lost asked a native: "Is this the road to St. Ives?" and received the reply, "I dunno."

Motorist—"Well, can you tell me which is the road to Cottenham?"

"I dunno."

Motorist (exasperated)—"Well, you don't seem to know much."

"Maybe I don't, but I'm not lost."

Profitable Sales Prices, Their Costs, and the Proof of Both

By T. SMYTH
David and Frere, Limitee

(Before Montreal Chapter, December, 7, 1934.)

The Author Solicits and Would be Grateful for any Criticism or Suggestions on the Main Principle Involved.

BEFORE starting a possible controversy, I want it borne in mind that I make no claim to having invented sales prices or even profitable sales prices. In fact, as a cost accountant, they had been more or less a matter of indifference to me until brought forcibly to my attention under the following circumstances:—

In 1931, I was engaged to install a complete cost accounting system to try and locate the source of rapidly disappearing profits. After four months of strenuous work, the first complete detailed report was published and I was inclined to pat myself on the back when my egoism was thoroughly punctured by the following conundrum:—

The company was manufacturing a new line of merchandise on Friday, samples to be given the salesmen on Saturday to be sold on the road Monday morning. My employers wanted to know before Saturday at 9 A.M. at what price this merchandise was to be sold to produce a profit?

Here was a question that no cost accounting system that I knew of would answer in the time required. The original request for a cost accounting system was **thought** to embody this instantaneous setting of sales prices.

My real problem therefore was not the installation of a cost accounting system, but the setting of profitable sales prices. In addition, they had to be set concurrently with the finishing of the process of manufacture, further complicated by the fact that these prices had to be set regardless of the volume of sales or production at any stated time. (Sales and productions, for our purposes, from now on, are synonymous).

Four months work went to fire the boilers and I had to try and find an answer to a problem which was new to me. The first objective towards profitable sales prices was very obviously establishing——

The Costs Involved

In doing this, time as the first consideration and a one-year period was clearly indicated, inasmuch as this is the usual period for stating earning power and is demanded by the management, directors, shareholders and governments--to name only a few.

The next consideration was volume in this one-year period. This was not difficult to arrive at, the full time production for one day multiplied by the number of working days in a year was a simple method, but this seemed rather optimistic as general experience has been that very few plants ever work at a peak load for a full year, so that some reasonable objective had to be set. Production, of course, will vary with any given firm; in this case, from a history of sales and production for the past, 70% of total capacity seemed a reasonable assumption of average production and later, in fact, proved essentially right.

The value of the product was next in line. The very name "Direct Charges" implied that there was no difficulty involved as they were easily ascertained and are practically non-essential to this discussion.

"Fixed Charges" however proved something of a stumbling block, as bear in mind that my problem demanded that they be applied to any given product as soon as manufactured.

As you are all thoroughly aware, from an accounting point of view, fixed charges are usually regarded as being of two groups:—fixed charges regardless of volume; and fixed charges which are fixed as to minimum, and increase with increasing production, but not necessarily in direct ratio.

The only solution which occurred to me was to make a careful audit for some years back, adjust these fixed charges for a sales and production volume of 70% and, then, set them all up in estimated form for the coming year.

Direct charges were easily calculated simultaneously with production. The unit calculated, plus the pre-calculated fixed charges, plus whatever allowance was decided on for profit and (the total of these three) equalled the profitable sales price.

It should be distinctly understood that there is no guarantee that any merchandise can be sold at profitable sales prices, particularly if competitors are selling at cost or lower.

At this point my primary object is achieved. A selling price is instantly available, but is it right, and if both cost and selling price are right, how to furnish:—

The Proof of Both

The standard profit and loss statement, including the detailed statement of operations, usually shows a unit cost or a statement of percentages, or both. Assuming the statement to be made periodically throughout the year, those items of direct charges will be assumed to be substantially right; on the other hand, the unit cost for the items of fixed charges will vary materially with the quantity of production during any period. I believe this feature has been a bone of contention ever since the first cost price was determined, and is, I suspect, well known to everyone present.

To circumvent this defect, one of the requirements was a subsidiary ledger for all fixed charges. All expenditures during the year are charged therein, and (I want to stress this) HAVE TO BE CLOSELY WATCHED to make certain that they remain within reasonable limits of the estimate.

This is not as difficult as the bare idea may seem. Lack of sufficient time to go into detail forces me to summarize by saying that in three years operation, the final adjustments at the end of the year as between the estimates and actual expenditures have never been more than one quarter of one percent of net sales.

As previously stated, one year is the period of time involved, but few firms are willing to wait a full year to discover whether they are operating at a profit or a loss. Thirteen periods were chosen and the calculations are again a matter of simple arithmetic. The estimated production and the estimated fixed charges were simply divided by thirteen to give the requirements for one period.

The usual procedure for producing a balance sheet and a profit and loss statement for any period is followed with one exception, which has to do with fixed charges. I will get back to this exception in a moment.

Just because an estimated sales volume for one year has been set and then divided equally into thirteen periods can by no stretch

of imagination guarantee that the actual sales in any period will be exactly as estimated, (no more or no less).

In actual practice, sales estimates for a period on this basis have proven to be 100 percent wrong. There are a great many reasons for this, and among others, seasonal activities are as good an example as any. Sales may be 80 or 120 percent of the estimate and actually have been as low as 40 percent or as high as 200 percent.

The single exception to the closing entries, previously mentioned, regarding the fixed charges, is outlined for simplification in the exhibit before you.

Samples of journal entries (or equivalent) to set up percentage of fixed charges proportionate to sales volume, where the fixed charges have been pre-determined as 25,000.00 per period.

Example 1, where sales volume is 80% of estimate.

Example 2, where sales volume is 120% of estimate.

EXAMPLE 1

Jan. 28th, 1934	Debit	Credit
Cost of goods sold, for fixed charges 80% of $25,000.00	20,000.00	
Deferred expenses due to subnormal sales	5,000.00	
Fixed Expense Subsidiary Ledger		25,000.00
	25,000.00	25,000.00

EXAMPLE 2

Jan. 28th, 1934	Debit	Credit
Cost of goods sold, for fixed charges 120% of $25,000.00	30,000.00	
Deferred expense due to abnormal sales		5,000.00
Fixed Expense Subsidiary Ledger		25,000.00
	30,000.00	30,000.00

Note that in every case cost of goods sold are charged with that proportion of fixed expenses which is directly proportional to the volume sold, the difference goes to deferred expense, of which more later.

The net result is that gross sales on the profit and loss statement immediately reflect whether the sales prices as set are profitable or not regardless of the volume sold.

The item "Deferred Expense due to Sub-normal or Abnormal Sales" remains on the balance sheet up to the end of the year and is ultimately wiped off. If the volume of sales has been greater than estimated there is a credit to deferred expense; if less, there is a debit to deferred expense, but if prices have been correctly set and sales made at these prices, there is also an operating profit, as distinct from the final item of "Net Profit or Loss from Operations" and the difference between the two will give the net figure.

There is also the possibility mentioned previously that sales cannot be made at profitable sales prices, and while this is beyond the range of my actual experience, it should not necessarily affect the system. Actual sales figures can be adjusted by whatever percentage they were sold below the profitable level and calculated accordingly to prove that the original prices as set were correct.

PROFIT AND LOSS STATEMENT AS AT JANUARY 28th, 1934

Estimated Sales Volume per period $100,000.00 Pre-determined fixed charges per period 25,000.00

		P. & L. as outlined $	P. & L. as outlined %		P. & L. usually used $	P. & L. usually used %
Net Sales		70,000.00	100.0		70,000.00	100.0
Cost of goods sold						
All Direct charges	46,250.00		66.1	46,250.00		66.1
All Fixed charges 70% of 25,000.00	17,500.00		25.0	25,000.00		35.7
Total Cost of Goods sold		63,750.00	91.1		71,250.00	101.8
Gross Profit		6,250.00	8.9	(LOSS)	1,250.00	1.8
Less financial expense over income net		250.00	0.4		250.00	0.4
OPERATING PROFIT (CONTRA BALANCE SHEET LIABILITIES)		6,000.00	8.5		nil	
LESS DEFERRED EXPENSES DUE TO SUB-NORMAL SALES (CONTRA BALANCE SHEET ASSETS)		7,500.00	10.7		nil	
Net loss from operations		1,500.00	2.2		1,500.00	2.2

Note that the use of the deferred expense item gives an operating profit amount of $6,000.00 or 8.5% of sales proving that the sales prices as set are correct, regardless of volume. On the contrary, the opposing statement merely states that fixed charges are 35.7% and leaves the trouble to be deduced.

BALANCE SHEET AS AT JANUARY 28th, 1934

ASSETS			LIABILITIES		
Cash	30,000.00				
Receivables less reserves	220,000.00		Accrued Wages		5,000.00
Inventories net	50,000.00		Payables		40,000.00
Current Assets	300,000.00		Current Liabilities		45,000.00
Prepaid Expenses	5,000.00		Shares Outstanding	585,000.00	
NOTE 1			Surplus from previous year	76,500.00	661,500.00
DEFERRED EXPENSE DUE TO SUB-NORMAL SALES (CONTRA P. & L. AND NOTE 2)	7,500.00		NOTE 2 OPERATING PROFIT (CONTRA P. & L. AND NOTE 1)		6,000.00
Capital Account less reserves	400,000.00				
	712,500.00				712,500.00

There are so many variations that can take place that I have set up only one form of profit and loss statement and Balance Sheet in the exhibits, assuming that sales are below estimated normal, but that the sales prices as set are correct and contain a sufficient margin are proved by the 8.5% operating profit.

Note the use of the expression "Operating Profit". To denote that profit, accruing from profitable sales prices as distinct from "Net Operating Profit or Loss to Date".

I make no claim that this phase of accounting is a patent remedy for all the ills that afflict business, neither is any claim made for perfection in accounting, but I do claim that it gave me at least, the answer to the problem which I set out to solve, that is the establishment of Profitable Sales Prices, Their Costs, and the Proof of Both.

ANY MANUFACTURING COMPANY

Exhibits

Profit and Loss Statement
Balance Sheet.

Remarks

These exhibits are not supposed to be criticized from any point of view other than the items under discussion.

THE TREND OF PRODUCTION COSTS

Commodity prices as measured by the Dominion Bureau of Statistics index number, which is based on the year 1926, declined from 71.4 in October to 71.2 in November. The following is a comparison by main groups:

	November 1933	October 1934	November 1934
Foods, beverages and tobacco	67.1	69.1	68.2
Other consumers' goods	77.0	76.9	76.7
All consumers' goods	73.0	73.8	73.3
Producers' equipment	85.4	89.5	89.5
Building & construction materials	80.7	82.5	81.9
Manufacturers' materials	58.8	62.6	62.9
All producers' materials	62.0	65.5	65.7
All producers' goods	64.3	67.9	68.1
All commodities	68.9	71.4	71.2

The principal losses in November were in the following: Fresh fruits, vegetables, fishery products, meats and poultry, fats, clay and allied material products and asphalt. The principal advances during the month were in hides and skins, raw silk, antimony and silver.

PERSONAL

Mr. J. P. Masterson, C.G.A., a former chairman of Montreal Chapter and a member of the Dominion Board, has severed his connection with Canadian Industrial Alcohol Co., Ltd., to assume an executive position with Hiram Walker & Sons Ltd., of Walkerville, Ont.

Even if you are on the right track you will be run over if you just sit there.

TARIFF and TAXATION

DEPARTMENT OF NATIONAL REVENUE

Departmental Rulings

Natural everlasting flowers, dried only, not waxed or chemically preserved, per samples. Tariff item 79b.

Electrical transcriptions, in the form of gramophone or phonograph records, for radio broadcasting or for other use. Tariff item 597a.

Steels for sharpening butcher knives or other knives. According to material and finish—usually under tariff item 446a.

"Acme" Tire Pressure Gauge, pencil type, per sample, made of brass and electro-plated with chromium. Tariff item 362.

Klemm "Cheat-proof" Governors, per illustration an automobile or truck accessory designed to be attached immediately adjacent to the carburetor of the engine so that the maximum speed of the automobile or motor truck may be controlled and limited to the speed at which the Governor is set. According to material and finish—usually of aluminium, not plated, and dutiable under tariff item 354.

Ottawa, 5th December 1934.

Tariff Change by Order in Council

By Order in Council (P.C. 3043), dated the 3rd December, 1934, the following regulation was established under the authority of paragraph (k), Section 284 of the Customs Act, effective on and after 8th December, 1934.

Regulation

The following goods, imported to be used as materials in Canadian manufactures, are hereby transferred to the list of goods which may be imported into Canada free of duty under the Intermediate Tariff:—

"Bitter oranges, known as Seville oranges, when imported prior to the 1st day of April, 1935, by manufacturers, for use exclusively in their own factories in the manufacture of marmalade,

British Preferential Tariff	Free
Intermediate Tariff	Free
General Tariff, per cubic foot	35 cts."

(To be designated as Tariff Item No. 801c).

Ottawa, 11th December, 1934.

Tariff Change by Order in Council

By Order in Council (P.C. 3105), dated the 8th December, 1934 the following regulation was established under the authority of Section 284, sub-section (m), of the Customs Act, effective on and after 15th December, 1934, the date of publication in the Canada Gazette:

Regulation

"The articles enumerated in the following Item, when imported for use in the Canadian manufactures as hereunder described, shall be subject to the several rates of duties of Customs, if any, set opposite the said Item that is to say:

Comb blanks of hard rubber, not further manufactured than pressed and vulcanized, when imported by manufacturers of hard rubber

combs for use exclusively in the manufacture of such hard rubber combs in their own factories. .....

Until December 31st, 1935.

British Preferential Tariff	Free
Intermediate Tariff	7½ p.c.
General Tariff	10 p.c."

(To be designated as Tariff Item No. 821).

Ottawa, 21st December, 1934.

Tariff Change by Order in Council

By Order in Council (P.C. 3197), dated the 18th December, 1934, the following regulation was established under the authority of Section 284, sub-section (k), of the Customs Act, effective on and after 1st January, 1935:

Regulation

"The following goods, imported to be used as materials in Canadian manufacturers, shall be entitled to entry Free of duty of Customs, under all Tariffs, namely:

Ethylene glycol, when imported by manufacturers of anti-freezing compounds, for use in the manufacture of such anti-freezing compounds in their own factories .....

From January 1st, 1935, to June 30th, 1935 inclusive.

British Preferential Tariff	Free
Intermediate Tariff	Free
General Tariff	Free"

(To be designated as Tariff Item No. 816).

Ottawa, 15th December, 1934.

Re: Limestone or Limerock

Effective January 1st, 1935, the Department will hold limestone or limerock produced in quarries not equipped with crushers, to be exempt from the consumption or sales tax in respect to the exemption provided in The Special War Revenue Act for "sand gravel, rubble and field stone."

Persons, firms or corporations who crush limestone or limerock will however, be required to account for the consumption or sales tax on their production of these materials.

Ottawa, 8th December, 1934.

Prohibited Goods—Tariff Item 1209 (a)

Tariff Item 1209 prohibits the importation of any goods,—

(a) which if sold, would be forfeited under the provisions of Part VII of the Criminal Code. This includes goods to which any false trade description is applied.

While ordinarily it is considered that the Courts and not officers of Customs should decide what in any case constitutes a false trade description and whether goods to which the same is applied would, if sold, be subject to forfeiture under Part VII of the Criminal Code, nevertheless, there are some instances of application of a false trade description where the offence is so clearly shown as to remove all doubt.

One such instance is where goods are imported bearing thereon or attached thereto the trade description "Made in Canada" while in fact made abroad, and intended to be sold in the condition imported and not to be, prior to such sale, attached to or form part of goods actually made in Canada.

Seizures should be reported on Form K. 9 of any such goods and the goods held pending departmental instruction.

Ottawa, 27th December, 1934.

Supplement to Appraisers' Bulletin No. 4215

The Honourable the Minister of National Revenue has ordered that the fixed valuation for duty purposes on Celery set forth in Appraisers' Bulletin No. 4215, be cancelled insofar as it applies to points in MANITOBA AND WEST THEREOF, effective the 7th January, 1935.

MEMBERSHIP CHANGES

December, 1934

MONTREAL CHAPTER

Resignations

Prefontaine L., Transferred to Non Resident.
Wilson, F. G., Transferred to Non Resident.
Sparks, H. McD., Northern Electric Co., Ltd.

New Member

Brydone-Jack, H. D., Canadian Pacific Railway Co.

TORONTO CHAPTER

Resignations

Taylor, C. B., Ernst. & Ernst.

HAMILTON CHAPTER

Change

Watson, R. A., N. Slater Co., Ltd., to F. Weston, N. Slater Co., Ltd.

NON-RESIDENT

New Members

Prefontaine, L., City Treasurer, Sherbrooke, Que.
Wilson F. G., St. John Drydock & Shipbuilding Co., Ltd., St. John, N.B.

STUDENT MEMBERSHIP

Annan, N. C., 2743 Maplewood Ave., Montreal, Que.

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RECEIVED IN DECEMBER

Plant Capacity, Measuring. N. A. C. Bulletin, Dec. 1.
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CHAPTER NOTES

TORONTO

Reported by W. A. McKague, General Secretary

Toronto Chapter's December meeting, like the previous three meetings this season, was well attended. The debate by our own members, on the question of whether depreciation should be assessed on volume of business or on time, brought out some good arguments on both sides. B. W. Lang of the Goodyear Company and G. Abrams, C.A., of J. P. Langley & Company, undertook to uphold the case for depreciation according to volume of business, and were able to show that the idea was not merely a theory, but was being applied with some success. On the opposite side were G. H. Metcalfe of Massey-Harris Co., and Ralph Dilworth, C. A., of Clarkson, Gordon, Dilworth, Guilfoyle and Nash. They found numerous loopholes in the case presented by the affirmative side; for instance, they were able to point out that much of depreciation was not at all related to volume of business. There was no decision on the debate, the executive having felt that the arguments and illustrations would provide a good evening.

HAMILTON

Reported by R. Dawson

The last meeting of the Hamilton Chapter on December 12 was another really successful meeting and the members are certainly turning out for meetings better than for many years. Here again we had an attendance of over thirty to hear Mr. J. E. McKee of the International Business Machines Co., Ltd., speak on the subject, "Business Machines as Applied to Accounting and the Compilation of Statistics."

Mr. McKee reviewed the history of business machines and their increasing worth in the business community. He spoke of the rapid growth in the use of such machines and the swift strides made in the manufacture of such machines. His talk will appear later in Cost and Management so tht no good purpose can be served by repeating it here. However those present certainly enjoyed the talk and the whole crowd later adjourned to the showrooms of the International Business Machines Co., Ltd., where Mr. P. B. Pratt, manager of the Tabulating Division and a valued member of the Hamilton Chapter, gave a vivid and varied demonstration of the use of these machines which was very much enjoyed.

The next meeting of the Hamilton Chapter will take place on January 23rd, when a Social Evening will be held. It has not yet been decided exactly what form this Social Evening wll take, but it is safe to say that it will be well worth while attending. Commencing in the next issue of Cost and Management we propose to publish short sketches of the career of various members of our chapter. Watch out for yours. Finally, although it may be a little late, we sincerely wish every member of the Society a Very Happy and Prosperous New Year.

The Canadian Society of Cost Accountants & Industrial Engineers

REFERENCE LITERATURE

This partial catalogue is issued for the convenience of our members. On many subjects such as costing in general, depreciation, etc., we have considerably more material than is catalogued here.

Reference literature may be borrowed by members, but must be returned by them within a reasonable time.

Abbreviations

Acct — The Accountant.
Accts Jrnl — The Accountants' Journal.
Accts Jrnl N Z — The Accountants' Journal of New Zealand.
Accts Mag — The Accountants' Magazine.
Amer Acct — The American Accountant.
Aust Acct — The Australian Accountant & Secretary.
C C A — The Canadian Chartered Accountant.
Can Off — Canadian Office.
Can Hot — The Canadian Hotel Review.
C P A — The Certified Public Accountant.
C A Aust — The Chartered Accountant in Australia.
Com Jrnl Acctcy — The Commonwealth Journal of Accountancy.
Cost Acct — The Cost Accountant.
C & M — Cost and Management.
Inc Accts — The Incorporated Accountants' Journal.
Ind Acct — The Indian Accountant.
Ind Can — Industrial Canada.
Int Man Inst — International Management Institute.
Jrnl Acctcy — The Journal of Accountancy.
M I E — Manufacturing and Industrial Engineering.
N A C A — National Association of Cost Accountants.
S I E — Society of Industrial Engineers.
Typo — The Typothetae Bulletin.

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Toronto, Canada

December, 1934.

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